

Claims

1. (Amended): A device to accommodate fluid thermal expansion/contraction in a closed heat transfer loop that eliminates non-condensable gases also, which is comprised of: a one-way out pressurizing pressure relief valve and a one-way in vacuum fluid recovery valve plumbed in parallel from the highest single point in the solar system to below the fluid level of an unpressurized overflow/recovery reservoir.
2. (Amended): A solar collector over-temperature protection device which consists of a steam condensing liquid-to-air radiator between the highest point on the solar collector and the device to accommodate fluid thermal expansion/contraction in a closed heat transfer loop that eliminates non-condensable gases also, which is comprised of: a liquid-to-air radiator in series with a one-way out pressurizing pressure relief valve and a one-way in vacuum fluid recovery valve plumbed in parallel from the highest single point in the system above the radiator to below the fluid level of an unpressurized overflow/recovery reservoir.
3. (Amended): A solar collector over-temperature protection device that consists of a steam pressure-actuated piston to open air dampers that allow outside air to flow over and cool the solar collector's absorber plate, where the piston pressure input is connected between the solar collector and the device to accommodate fluid thermal expansion/contraction in a fluid filled, closed loop, system, which is comprised of: a pressure activated piston connected to the closed loop, a one-way out pressurizing pressure relief valve and a one-way in vacuum fluid recovery valve plumbed in parallel from the single highest point in the solar system to below the fluid level of an unpressurized overflow/recovery reservoir.
4. (Canceled):
5. (Canceled):

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7. (Canceled):

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10. (Canceled):

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12. (Canceled):

13. (Amended): A solar collector over-temperature protection device which includes a steam condensing liquid-to-air radiator, a pressure-actuated piston operated air dampers and a fluid thermal expansion/contraction assembly, which is comprised of: a piston-mechanical actuator for collector air dampers according to Claim 3, a liquid-to-air radiator according to Claim 2 and a fluid thermal expansion/contraction assembly according to Claim 1.

Claims

1. (Previously presented Amended): A device to actively manage accommodate fluid thermal expansion/contraction pressure/vacuum and eliminate non-condensable gases in a closed heat transfer loop that eliminates non-condensable gases also, unpressurized when cold, fluid filled, self pressurizing, solar system, which is comprised of: a one-way out pressurizing pressure relief valve and a one-way in vacuum relief fluid recovery valve plumbed in parallel from the highest single point in the solar system to the bottombelow the fluid level of an unpressurized, partially filled overflow/recovery reservoir.
2. (Previously presented Amended): A solar collector over-temperature protection device which consists of a boiling activated, pressurized steam condensing liquid-to-air radiator between the highest point on the solar collector and the device to accommodate fluid thermal expansion/contraction in a closed heat transfer loop that eliminates non-condensable gases also, actively manage pressure/vacuum and eliminate non-condensable gases in a closed loop, unpressurized when cold, fluid filled, self pressurizing, solar system, which is comprised of: a liquid-to-air radiator in series with a one-way out pressurizing pressure relief valve and a one-way in vacuum relief fluid recovery valve plumbed in parallel from the highest single point in the solar system above the radiator to below the fluid level the bottom of an unpressurized, partially filled overflow/recovery reservoir.
3. (Previously presented Amended): A solar collector over-temperature protection device which that utilizes a consists of a steam pressure-actuated piston to open air dampers that allow outside air to flow over and cool the solar collector's absorber plate, where the piston pressure input is connected between the solar collector and the device to accommodate fluid thermal expansion/contraction to actively manage pressure/vacuum and eliminate non-condensable gases in a fluid filled, closed loop, unpressurized when cold, fluid filled, self pressurizing, solar system, which is comprised of: a pressure

activated piston connected to the closed loop, a one-way out pressurizing pressure relief valve and a one-way in vacuum relief fluid recovery valve plumbed in parallel from the single highest point in the solar system to below the fluid level~~the bottom~~ of an unpressurized, ~~partially filled~~ overflow/recovery reservoir.

4. (Canceled):

5. (Canceled):

6. (Canceled):

7. (Canceled):

8. (Canceled):

9. (Canceled):

10. (Canceled):

11. (Canceled):

12. (Canceled):

13. (Previously presentedAmended): A solar collector over-temperature protection device which includes~~both~~ a steam condensingboiling ~~activated~~, liquid-to-air radiator ~~and~~, a pressure-actuated piston operated air dampers ~~which are both connected~~ and a fluid thermal expansion/contraction assembly, which is comprised of: a piston-mechanical actuator for collector air dampers according to Claim 3, a liquid-to-air radiator according to Claim 2 and a fluid thermal expansion/contraction assembly according to Claim 1.